MATH 110.3 (05) T1, 2004–05: CALCULUS I

Quiz Three – November 16, 2004 – 30 Minutes

No books, notes or calculators are allowed. Encode your student number in the upper left corner of the opscan sheet. Print your name in the space indicated at the top of the opscan sheet. This is a multiple-choice computer-marked quiz. Use a soft pencil. Return only the opscan sheet. Each answer is worth one point. The possible answers for each question are

$A)\,0 \quad B)\,1 \quad C)\,2 \quad D)\,3 \quad E)\,4 \quad F)\,5 \quad G)\,6 \quad H)\,7 \quad I)\,8 \quad J)\,9$

The tangent line to the curve $y = \cos x$ at $x = 0$ has the slope-intercept equation $y = mx + b$ where $\quad -\cos x = -1$

$$\textbf{1)} \quad m = \qquad\qquad \textbf{2)} \quad b =$$

$f(g'x)\cdot$

$3 \cdot 8$

$= 24$

If $\lim\limits_{x \to 0} \dfrac{\sin 3x}{\sin 4x} = \dfrac{a}{b}$ (in lowest terms) then

$f(g(x))\cdot f'(x)$

$$\textbf{3)} \quad a = \qquad\qquad \textbf{4)} \quad b =$$

Suppose that $h(x) = f(g(x))$ and that $g(1) = 2$, $g'(1) = 2$, $f(2) = 3$, $f'(2) = 8$. Then $h'(1) = 10a + b$ where

$$\textbf{5)} \quad a = \qquad\qquad \textbf{6)} \quad b = \qquad f'(x) = 8(x+1)^7 \cdot 0$$

The tangent line to the curve $y = (x + 1)^8 + 2$ at $x = 0$ has the slope-intercept equation $y = mx + b$ where

$y - 3 = x - 0$

$y = 8x + 3$

$$\textbf{7)} \quad m = \qquad\qquad \textbf{8)} \quad b = 8$$

Consider the ellipse $x^2 + 2xy + 4y^2 = 4$. If b is the y-intercept of the tangent line through the point $(0, 1)$ then

$$\textbf{9)} \quad b =$$

$\dfrac{1}{1+x^2}$

Let $f(x) = \tan^{-1}(3x^2 + 1)$. Then $f'(1) = \dfrac{a}{10b + c}$ (in lowest terms) where

$$\textbf{10)} \quad a = \qquad \textbf{11)} \quad b = \qquad \textbf{12)} \quad c =$$

If $D^{99} \sin x = \dfrac{a}{\sqrt{b}}$ at $x = \dfrac{3\pi}{4}$ then

-135

45

$$\textbf{13)} \quad a = \qquad\qquad \textbf{14)} \quad b =$$

If m is the slope of the tangent line to $y = \ln(1 + 2x^2)$ at $x = 0$ then

$$\textbf{15)} \quad m =$$

$$\dfrac{1 \cdot 6x}{1 + \left(3x^2 + 1\right)^2} = \dfrac{6}{17} \qquad \dfrac{1 \cdot 4x}{1 + 2x^2} \qquad x = 0$$